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ABSTRACT

This formative report presents data collected through the second year of full operation (1990-1991) of Nolin Middle School for Environmental Science, in the Kansas City School District, Missouri. The report focuses on student demographics; program implementation information; achievement data; and perceptions of staff, parents, and students of the program. The infusion of the magnet theme (environmental science) was evidenced in site and classroom visits and documented by student participation in field trips and recycling projects. Student questionnaires showed a trend toward positive perceptions, and the teacher and parent questionnaires revealed a dramatic jump in positive perceptions over responses from a previous study. These responses are presented in tables 11-13. An appendix provides the student perception questionnaire. Test scores appear in tables 8-10, along with clarifying information. A final section draws conclusions about the program and makes recommendations for program improvement. The recommendations include: (1) The continuation of efforts to keep communication open between administration and staff; (2) the development of a discipline code, and inservice support in this area; (3) continuation of inservice opportunities corresponding with teacher requests; and (4) district administrative aid with analyses of test scores and recommendations for curriculum and instruction revisions.

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Formative Evaluation of the Nowlin Environmental Science Magnet Middle School

1990-1991

Evaluation Office

The School District of Kansas City, Missouri

August 1991

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Formative Evaluation of the Nowlin Environmental Science Magnet Middle School

1990-1991

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August 1991

Evaluation Office
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The School District of Kansas City, Missouri

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Executive Summary

The Nowlin Middle School For Environmental Science began full operation in fall 1989 following a year of limited implementation at the sixth grade level in 1988-1989 which provided continuity to students entering Nowlin from the North Rock Creek/Korte Academy for Environmental Science. This end-of-year formative report presents data collected through the program's second year of full operation, including student demographics, program implementation information, achievement data, and perceptions of staff, parents, and students. A final section draws conclusions about the program and makes recommendations for program improvement. It is important to emphasize that this is a formative report.

The infusion of the magnet theme was evidenced in a variety of ways, with theme-centered displays, speakers and activities, on-going recycling projects, and theme-related field trips. Classroom observations revealed that the theme is being infused across the curriculum, with the greatest amount of time spent on theme-related activities being in science and social studies classes, not surprising since both areas are closely tied to the environmental science theme. Critical thinking and problem solving skills were observed across the curriculum also with the greatest amount of time devoted to activities involving these skills spent in math and language arts classes. These data were consistent with reports by over two-thirds of the students at all grade levels that they were learning problem solving skills and decision making skills that they have been able to apply in their life outside school. Teachers and students also reported that they were applying more sound environmental practices in their personal lives, with parent data consistent with the student perception that this was so. Parents also said that the students were making them more environmentally aware and encouraging them to act in more environmentally sound ways. This second year of program implementation, the teacher and parent questionnaires revealed a dramatic jump in positive perceptions over responses given by the two groups in the spring of 1990. Student questionnaires also showed a trend toward more positive perceptions, with a greater proportion of positive answers on about one-half of the responses at different grade levels. Overall, sixth grade students had more positive perceptions of the environmental science program and the school itself than either the seventh or eighth graders. Difficulties can be expected in any new program and Nowlin teachers expressed their perception of two of the problems on the teacher questionnaire. Sixty-eight percent of teachers rated discipline as fair or poor and 44% rated communication among the faculty/staff as fair or poor. Student perceptions supported teachers' views about discipline. When asked

about the behaviors in the classrooms and halls, the large majority of students at all grade levels (over 65%) said students were not well behaved in those school settings.

ITBS test scores in the theme-related areas of science and social studies have gone up over the two years since magnet implementation began. However, no major progress has been made in raising ITBS test scores in the core subjects such as language and math. On the MMAT, Nowlin scores are comparable to those of the district across subjects in sixth grade and in eight grade science and social studies, but remain weak in comparison to the district in eighth grade reading/language arts and math areas and in all subject areas at both sixth and eighth grade when compared to the state.

Acting in response to past recommendations (Seever, 1990), the principal reports that team meetings have been held to try to keep open lines of communication; resource teacher positions have all been filled; teacher transfers were facilitated by the building and district administration; the goals and objectives of the Nowlin Planning Outline were reviewed and clarified; and the discipline policy was reviewed and discussed. Efforts to clarify the goals and objectives were apparently successful as 93% of teachers reported that those objectives were clear. Communication problems among faculty/staff are still perceived by a majority of teachers. Discipline problems still plague teachers and administration and are recognized in questionnaire responses by both teachers and students.

There is evidence that the Nowlin Environmental Science Middle School has made progress in spite of difficult circumstances and problems. There are many signs of successful implementation, with visible evidence in displays, theme-oriented field trips, and some achievement score gains. Classroom observations show infusion of the theme and problem solving activities across the curriculum. Teacher, parent, and student perceptions of the program are much more positive at the end of this second year of implementation. Discipline and communication problems, however, remain to be solved. Specific recommendations based on the data gathered are contained at the end of this report.

FORMATIVE EVALUATION
OF THE
NOWLIN ENVIRONMENTAL SCIENCE
MAGNET MIDDLE SCHOOL

1990-91

Introduction

The Nowlin Middle School For Environmental Science began full operation in fall 1989 following a year of limited implementation at the sixth grade level in 1988-1989 which provided continuity to students entering Nowlin from the North Rock Creek/Korte Academy for Environmental Science. This end-of-year formative report presents data collected through the program's second year of full operation, including student demographics, program implementation information, achievement data, and perceptions of staff, parents, and students. A final section draws conclusions about the program and makes recommendations for program improvement. It is important to emphasize that this is a formative report. According to the *Long Range Magnet Plan* (Hale & Levine, 1986), "a school's effectiveness should **not** be determined during its first year of operation. ... during its early years [evaluation] should be designed with the intent of improving, modifying, and revising program implementation" (pp. 46-47). The *Long Range Magnet Plan* further states that there should be two years of formative evaluation before a summative evaluation is done in year three.

Program Description

The Nowlin Middle School For Environmental Science serves students in grades six through eight. As in other Kansas City, Missouri School District middle schools, Nowlin uses a team approach. A team consists of five teachers (English, social studies, science, mathematics, and reading). Each student participates daily in these classes plus two exploratory classes chosen from art, vocal music, physical education, foreign language, home economics, industrial technology, and health.

The mission of the Nowlin program is encapsulated in the following statement taken from the *Nowlin Middle School For Environmental Science Planning Outline* (Nowlin Middle School Task Force, 1989):

Nowlin Middle School offers an environmental science curriculum which cultivates an appreciation and understanding of environmental principles and natural processes upon which life ultimately depends.

The program objectives stated in the planning document include infusion of the theme across the curriculum with grade level teams participating in at least two field trips each semester and at least one outdoor field experience each year, the display of physical evidence related to the theme, on-going recycling projects, theme related physical facilities (e.g. barn, gardens,...), a Learning Resource Center equipped for student, faculty, and community patron study of environmental issues, computers to be used for improvement of basic skills, computer literacy, and enhancement of environmental instruction, and theme-related career information infusion across the curriculum and into the field experiences.

Evaluation Design

The following questions were used to focus information collected for this report:

1. What is the enrollment breakdown by grade level and minority/non-minority status? How does this compare to the previous school year?

2. To what degree is the program being implemented as described in the Nowlin planning outline?

3. What are the perceptions of school staff, parents, and students regarding the current school year?

4. What are the reading, language arts, math, science, and social studies achievement levels as measured by the Iowa Tests of Basic Skills (ITBS) and the Missouri Mastery and Achievement Tests (MMAT)?

While this report concentrates on the 1990-91 school year, some data from 1988-89 and 1989-90 are included to help place the current year's data in perspective. Enrollment data for 1988-89, 1989-90, and 1990-91 presented in this report were obtained from the district's Research Office. Implementation data were obtained from observations made during site visits to Nowlin Middle School, teacher questionnaires, interviews with school staff, and documents provided by school staff and administration. Perceptions were measured using questionnaires administered in the spring to the administration, support staff, teachers, and students. Parent perceptions were obtained by telephone survey.

Results and Discussion

Demographics

Table 1 reports, for each grade level, the environmental science program capacity as used by the Admissions Office for student assignment, the actual enrollment as reported by the Research Office, the difference between the two figures, and the percent of the capacity that was filled. Sixth and eighth grade levels were not filled to capacity, with 79% and 90% respectively. Seventh grade, with a program capacity of 300 and an enrollment of 333 was filled to 111% of capacity.

Nowlin enrollment data for 1988-1989, 1989-90, and 1990-91 are summarized in Table 2. Enrollment figures reveal that Nowlin's minority/non-minority ratio moved away from the desired 60% minority/40% non-minority ratio at every grade level. Minority percentage increased by five percent at grade levels six and seven, going to 68% and 69% minority respectively. Eighth grade minority enrollment increased by one percent, moving from 68% to 69% minority.

Implementation

Staff Development/Inservice. Table 3 presents teacher responses to questions concerning staff development/inservice. Sixty-two percent of teachers responding stated that they were able to apply information from theme-related inservice in their classrooms often or very frequently (item 1). Asked about their satisfaction with staff development/inservice, 79% of the teachers were satisfied or very satisfied with theme-related inservice (item 2) while 62% of the teachers stated they were satisfied or very satisfied with sessions regarding the district's core curriculum or non-theme related courses (item 3). Item four defines areas over which

Table 1
Percent of Enrollment Capacity Filled for
Nowlin Environmental Science Program
1990-1991

Grade	Program Capacity [1]	Actual Enrollment [2]	Difference	% of Capacity
6	300	238	-62	79%
7	300	333	+ 33	111%
8	300	270	-30	90%
Total	900	841	-59	93%

[1] Program capacity utilized by the Admissions Office when placing students in magnet programs.

[2] From *September 26, 1990 Student Membership Report* (Research Office, 1990).

Table 2

Nowlin Minority and Non-Minority Enrollment for School Years 1988-1989, 1989-1990, and 1990-1991

	1988-1989				1989-1990				1990-1991			
	Minority		Non-Minority		Minority		Non-Minority		Minority		Non-Minority	
Grade	%	N	%	N	%	N	%	N	%	N	%	N
6	59%	(237)	41%	(164)	63%	(185)	37%	(110)	68%	(161)	32%	(77)
7	67%	(257)	33%	(124)	64%	(202)	37%	(116)	69%	(228)	32%	(105)
8	44%	(126)	56%	(158)	68%	(184)	32%	(87)	69%	(187)	31%	(83)
Total	58%	(620)	42%	(446)	65%	(571)	35%	(313)	69%	(576)	32%	(265)
Grand Total		**1066**				**884**				**841**		

Note: Enrollment data provided by the Kansas City, Missouri School District Research Office.

Table 3

Nowlin Teacher Questionnaire Responses to Staff Development/Inservice Items Spring 1991

Item		Response Alternatives	(N = 59)
1.	How often were you able to apply in your classroom information from inservice related to theme implementation and infusion	Very Frequently	21%
		Often	41%
		Seldom	29%
		Never	9%
2.	How satisfied have you been with the staff development and inservice sessions regarding the environmental science theme?	Very Satisfied	29%
		Satisfied	50%
		Dissatisfied	14%
		Very Dissatisfied	7%
3.	How satisfied have you been with the staff development and inservice sessions regarding the district's core curriculum?	Very Satisfied	13%
		Satisfied	49%
		Dissatisfied	27%
		Very Dissatisfied	11%
4.	Do want additional inservice to:		
	a. help with environmental science theme infusion	Yes	49%
	b. increase knowledge of environmental science	Yes	43%
	c. increase effectiveness of instruction	Yes	35%
	d. learn about more effective discipline	Yes	34%
	e. increase knowledge about use/application of computers	Yes	29%
	f. increase knowledge about careers related to env. sci.	Yes	28%

teachers said they wanted more inservice. These included sessions designed to help with theme infusion (49%), increase knowledge of environmental science (43%), increase effectiveness of instruction (35%), learn about more effective discipline (34%), increase knowledge about use/application of computers (29%), and increase knowledge about careers related to environmental science (28%).

Nowlin materials, facilities, and grounds. Eighty-eight percent of the teachers reported being able to get the materials and supplies necessary to teach the theme courses and 93% reported being able to get supplies necessary to teach the core curriculum. Teachers were asked about their satisfaction with, and use of, the Nowlin grounds and facilities. Their responses to these questionnaire items are presented in Table 4. Eighty-seven percent of responding teachers stated that they were very satisfied or satisfied with the Nowlin buildings, grounds, etc. (item 1). Asked to what degree their students use the school grounds for environmental study 43% said to a good or great degree, 41% said to some degree, and 16% said not at all (item 2). Seventy-one percent of responding teachers stated that they believe the Learning Resource Center (LRC) is well equipped for study of environmental issues by students and/or faculty (item 3). Asked about frequency of use of the LRC, 22% said they use it often or very frequently themselves to prepare for class or become more informed about the theme and 49% said their students use the LRC to study environmental science often or frequently (items 4 and 5 respectively). Fifty-eight percent of teachers responding said that their students use the botany lab/greenhouse to a great or good degree (item 6), while 39% said they have their students make use of the weather station to a great or good degree (item 7). Forty-four percent said that their students use the barn to a great or good degree (item 8). Asked to respond to the statement "I am comfortable with my knowledge of computers and their use in the classroom" 52% agreed or strongly agreed with that statement, while 48% disagreed or strongly disagreed (item 9). Fifty-five percent stated their students used computers to a good or great degree to reinforce basic skills, while 13% said to some degree, and 33% said not at all (item 10). Twenty-nine percent said they had their students use computers to enhance learning in environmental science to a good or great degree, 38 said to some degree, and 33% said not at all (item 11). Asked to what degree they had their students use computers to teach or improve student computer literacy, 33% said to a good or great degree, 27% said to some degree, and 40% said not at all (item 12). The computer resource teacher prepared and delivered several sessions in the Fall to orient teachers to the Computer Curriculum

Table 4

NowlinTeacher Questionnaire Responses to Materials, Facility, and Grounds Use Items

Spring 1991

Item		Response Alternatives	(N = 59)
1.	How satisfied have you been with the adequacy of the Nowlin facilities (i.e. the buildings, grounds, etc.) in facilitating theme implementation?	Very Satisfied	31%
		Satisfied	56%
		Dissatisfied	11%
		Very Dissatisfied	2%
2.	To what degree during the year do your students use the school grounds for environmental study?	To a Great Degree	14%
		To a Good Degree	29%
		To Some Degree	41%
		Not At All	16%
3.	Do you believe the LRC is well equipped for study of environmental issues by students and/or faculty?	Yes	71%
		No	29%
4.	How often do you use the LRC to prepare class materials, become more informed about the theme, etc.?	Very frequently	2%
		Often	20%
		Some	42%
		Seldom	25%
		Never	10%
5.	To what degree during the year do your students use the library/LRC for study of environmental science?	To a Great Degree	19%
		To a Good Degree	30%
		To Some Degree	46%
		Not At All	5%
6.	To what degree during the year do your students use the greenhouse/botany lab?	To a Great Degree	20%
		To a Good Degree	38%
		To Some Degree	29%
		Not At All	14%
7.	To what degree during the year do your students use the weather station?	To a Great Degree	13%
		To a Good Degree	26%
		To Some Degree	28%
		Not At All	33%
8.	To what degree during the year do your students use the barn?	To a Great Degree	18%
		To a Good Degree	26%
		To Some Degree	37%
		Not At All	19%
9.	I am comfortable with my knowledge of computers and their use in the classroom.	Strongly Agree	16%
		Agree	36%
		Disagree	34%
		Strongly Disagree	14%
10.	To what degree do you have students use computers to reinforce basic skills in math, reading, etc.?	To a Great Degree	33%
		To a Good Degree	22%
		To Some Degree	13%
		Not At All	33%
11.	To what degree do you have students use computers to enhance learning in environmental science?	To a Great Degree	13%
		To a Good Degree	16%
		To Some Degree	38%
		Not At All	33%
12.	To what degree do you have students use computers to improve student computer literacy?	To a Great Degree	9%
		To a Good Degree	24%
		To Some Degree	27%
		Not At All	40%

Corporation lab. In addition, in-building inservice was provided on the Appleworks program and the use of a projection pad for sharing a computer program with the whole class. There have also been team meetings with the resource teacher. One major problem, according the resource teacher, is the Appleworks materials are all "stand-alone" versions. Attempts over the past two years to get the network version of Appleworks and a Crosstalk board to allow use of a variety of software have been unsuccessful.

Visible evidence of magnet theme. During fall and spring, observations were conducted to document visible evidence of the magnet theme. Twelve classrooms were randomly selected across the three grade levels from math, English, science, and social studies in addition to art, music, and computer classrooms and, in the fall, the gym. Hallways were also observed for theme-related materials or displays. Evidence suggested that an attempt was made by the large majority of teachers to create a theme-centered environment in their classrooms. In the fall, 13 classrooms were observed to have 967 theme-related displays, making an average of 74 per room. In the spring, 12 classrooms were found to have 798 displays for an average of 67 per room. Averages do not give a totally representative picture because the science classrooms, as might be expected, contained a much larger proportion of theme-related displays. Displays were found in 100% of the rooms visited both fall and spring, with a range of seven to 191 displays in fall and 46 to 189 in spring in any single room. Making up the bulk of the displays were equipment, plants, posters, models, aquariums, animals (both live and preserved), student work, and photographs. Displays in individual classrooms in the spring most frequently dealt with wildlife, trees and plants, domestic animals, ocean life, and social studies, and ecology/recycling in that order. The proportion of specifically "environmental" science displays (i.e. recycling, ecology, etc.) in relation to the "theme-related" science and social studies displays was relatively small, with less than ten percent specifically environmental in content. Examples of displays in this category would be those specifically referencing ecology, displays on recycling, etc. Distinguishing between infusion/inclusion of "science" or "social studies" topics in general and "specifically environmental science" topics is difficult in practice. For most purposes in this report, a broad view of the disciplines is used. At this point in reporting visible evidence of the theme, the subtle matter of differentiation is brought up because the existing proportion may not make it immediately obvious to the casual observer or visitor entering the school that the theme is environmental science versus natural science, life science, or a similar theme. The small proportion of specifically environmental displays is

particularly important when combined with the data from hallway observations. There were two hallways devoid of displays of any kind in the fall and one in the spring. The rest of the hallways had between six and twenty-three displays, some permanently part of the wall, such as murals. Hallways and classrooms were checked 2-3 weeks after the original observation from which the above counts were derived and little was changed.

Field trips and theme-related activities. Another indicator of magnet theme implementation is the number and type of field trips. A review of field trips by Nowlin students, presented in Table 5, reveals that field trips were taken to 39 locations during 1990-91. A perusal of the destination list in the table (some visited by more than one group) shows that the great majority of the experiences appear to be theme related. Several of the trips gave students the opportunity to travel and study outside the Kansas City area including trips to the Louisiana wetlands, Chicago, St. Louis, Omaha, Topeka, Jefferson City, and Guthrie, Iowa. Students have also participated in many theme-related activities throughout the year including the "adopt a wild child" program of the Kansas City Zoo, the building of the earth day sculpture at Volker park, outdoor field study days, an earth week poster contest, and stream, highway, and park clean-up days. There were many environmentally oriented school presentations including a recycling program put on by Dow Chemical, Brian Busby on weather, and an Environmental Protection Agency (EPA) assembly and slide show. Nowlin students also did

Table 5

Nowlin Field Trip Destinations in 1990-91

Agriculture Hall of Fame	Kansas City Zoo	Powell Gardens
Alvin Alley Dance Theater	Kansas City Museum of Natural History	Rock and Mineral Show
Benjamin Ranch	K.U. Museum of Natural History	Skiing at Squaw Creek
Burr Oaks	Lake of the Woods	Guthrie, Iowa (overnite)
Chicago and St. Louis	Lakeside Nature Center	St. Louis
Earnest Shepherd Memorial Center	Line Creek Museum	St. Louis Gardens /Zoo
Fleming Pond Fishing	Louisiana Wetlands	Theatre for Young America
Fort Osage	Missouri River Queen	Topeka Zoo
Frontier Skill (hodge park in nkc)	Missouri Town Lake Jacomo	TWA overhaul base
Hannibal MO (overnite)	Nance Museum of Middle East Art	Warrensburg (overnite)
Independence Regional Hospital	Nelson-Atkins Museum of Art	Watkins Woolen Mill Park
James A Reed Wetlands Study	Omaha Zoo and Aquarium	Wolf Creek Nuclear Plant
Jefferson City Overnite	Planetarium at SWHS	Wornall House

planting and composting projects both on campus and at Longview Lake. Groups of students were involved in the Nowlin Science Fair, the Science and Engineering Fair, the Science Pioneers Saturday seminar series, and a program for tutoring students at fellow-theme and feeder school North Rock Creek/Korte. Several organizations or clubs existed which involved students in theme-related activities including computer club, environmental choir, math club, recycling club, science club, National Junior Honor Society, school newspaper, and student advisory council. Over 217 names were on membership lists for these organizations (some students may belong to more than one club).

Teacher reported theme infusion. Responses to implementation-related items on a questionnaire administered in the spring are contained in Table 6. All teachers said that they infused the theme to at least some degree into the subject area that they teach (item 1). Asked to what degree they had been able to infuse information about careers associated with the environmental science theme into their subject area 32% said to a good or great degree, while 61% said to some degree and 7% said not at all (item 2). However, 54% said they were able to infuse theme related career information into their field trips to a good or great degree with 39% saying to some degree and again 7% saying not at all (item 3).

Classroom observations. Forty-nine classroom visits of 20 to 25 minutes each were made during the fall and winter of 1990-91 for a total of 1,007 minutes of observation time. Visits were unannounced and classes from across the curriculum were randomly selected

Table 6
Nowlin Teacher Questionnaire Responses to Infusion Items
Spring 1991

Item		Response Alternatives	(N= 59)
1.	To what degree have you been able to infuse the environmental science theme into the subject area you teach?	To a Great Degree	35%
		To a Good Degree	40%
		To Some Degree	26%
		Not at All	0%
2.	To what degree have you been able to infuse information about careers associated with environmental science into your subject?	To a Great Degree	11%
		To a Good Degree	21%
		To Some Degree	61%
		Not at All	7%
3.	To what degree have you been able to infuse information about careers associated with environmental science into the field trips you have been involved in?	To a Great Degree	14%
		To a Good Degree	40%
		To Some Degree	39%
		Not at All	7%

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across all grade levels and school periods. An attempt was made to time visits to make observation periods lie several minutes after the beginning and before the end of classes to observe more instructional and less organizational time. Hands-on learning and activities designed to improve problem-solving and critical thinking skills are important to the environmental science theme according to both the *Nowlin Middle School for Environmental Science Planning Outline* (Nowlin Middle School Task Force, 1989) and the *Long Range Magnet Plan* (Hale & Levine, 1986). Classroom activities or processes involving these critical facets were observed during 47% of the total minute units of observation. They did not have to be theme-centered to be counted, however a large majority of them were observed during activities that were theme-related. Infusion of the theme was observed on 78% of the visits with theme-centered activity occurring approximately 64% of the total time in minutes. The reader is cautioned to be aware that there is no definitive "correct" or "optimal" amount of time for either incorporation of critical thinking skills related activities or infusion of a high-interest theme. The problem in this specific case is compounded by the ambiguity involved in defining and distinguishing between which minute-by-minute activities constitute the teaching of problem solving or critical thinking and where to draw the line between infusion/inclusion of "science" or "social studies" topics in general and "environmental science," a sub-area encompassing parts of both of those disciplines and which could have a more narrow scope including only such things as ecology, recycling, etc. A relatively broad interpretation of environmental science was used to define all theme-related activities recorded during classroom observations and for general purposes throughout this report. As can be seen in Table 7, there was a marked difference across various subjects for both incorporation of the hands-on/critical thinking processes and theme infusion. Infusion of the theme was observed to the greatest extent in science and social studies (with 94% and 84% of the time in minutes respectively). Theme infusion was also observed in language arts for 54% of the observation time and in math classes, to a lesser degree, with 25% of the time spent on theme-related activities. Critical thinking/problem solving activities are reported separately in Table 7 and also in combination. Many hands-on activities could also have been recorded as minutes with critical thinking/problem solving activities. The combination category allows the total time in minutes to remain at 100%. Critical thinking/problem solving activities were observed in math, language arts, social studies, and science classes for 41%, 38%, 26%, and 14% of the time in minutes respectively. These processes were observed in conjunction with

Table 7

Nowlin Classroom Data Reporting Observed Infusion of Theme and Critical Thinking, Problem Solving, and Decision Making Skills

1990-91

	Science	Math	Language Arts	Social Studies
Total Minutes Observed	227	241	265	274
Infusion				
% of Visits Observed Infusion	100%	33%	85%	92%
% of Total Minutes Observed	94%	25%	54%	84%
Critical Thinking/Problem Solving,				
% of Visits Observed	27%	67%	62%	46%
% of Total Minutes Observed	14%	41%	38%	26%
Hands-On Activities				
% of Visits Observed	27%	25%	46%	23%
% of Total Minutes Observed	17%	11%	24%	16%
Crit. Thinking/Prob. Solv./Hands-On Combination				
% of Visits Observed	18%	25%	15%	0%
% of Total Minutes Observed	15%	12%	6%	0%

hands-on activities in science, math, and language arts classes for 15%, 12%, and 6% of the total minutes respectively and were not observed in social studies classes. Hands-on activities were recorded for 24%, 17%, 16%, and 11% of the minutes for language arts, science, social studies, and math respectively.

Community involvement and support. Interviews with the principal revealed that Nowlin has developed many community ties that have benefitted the program through provision of expertise, materials, inservice, and use of, or access to, facilities. The school participates in the Mid-American Consortium for Engineering and Science Achievement (MACESA) a partnership of schools, universities, and industries whose purpose is to provide educational opportunities for minority students. Graduate participants in MACESA are given priority consideration for engineering scholarships to participating universities. Nowlin also has strong partnership ties with Mobay Chemical Company (which has provided furniture,

speakers, and other donations), ATT Microelectronics at Lee's Summit, the Pizza Hut on Highway 40, the Boy and Girls Club of America, Youth Net, and the inner city Kiwanis group.

Achievement

ITBS. A summary of Nowlin and district ITBS scores for 1989, 1990, and 1991 are displayed as percentile ranks in Table 8. Percentile ranks were derived by conversion of mean grade equivalent scores. Examination of the table reveals that Nowlin students scored at or above the national norm (the 50th percentile) only in sixth grade science and social studies (60th and 57th percentile ranks respectively) and seventh grade science (63rd percentile rank). Scores remained the same or increased over 1990 scores in reading, math, language, and science at seventh grade, while sixth grade science and social studies scores increased 13 and 7 percentile points respectively. Nowlin's sixth and seventh grade science and social studies scores are above those of the district. Since 1988-89, the year before Nowlin became a magnet school, students in grades six and seven have made gains of 24 and 28 percentile points, respectively, in science and 18 and 7 percentile points, respectively, in social studies. Since spring 1990 testing, there were decreases of five to six percentile points in sixth grade reading, math, and language, seventh grade social studies, and eighth grade social studies. Non-minority scores were higher across all grade levels and subjects with both groups showing similar gain/loss patterns in their scores.

MMAT. Table 9 presents the MMAT scores for Nowlin, the Kansas City, Missouri School District (KCMSD), and the state of Missouri for 1989 and 1990. According to the *MMAT Guide to Score Interpretation and Use* (1991), meaningful strengths or weaknesses between groups of students can be determined using the average student error of measurement of 25. Using this criterion, Nowlin scores are comparable to those of the district across all subject areas at both sixth and eighth grade with the exception of eighth grade reading/language arts and math where Nowlin scores are weak in comparison to district scores. Compared to the state Nowlin is weak across all subject areas at both sixth and eighth grade levels. Further examination of the table will also reveal, however, that while scores decreased across both grade levels and all subjects between 1990 and 1991 for Nowlin, the district, and the state, over the two year period since 1989, Nowlin's scores increased in sixth grade science and social studies by 34 and 19 points respectively. District and state scores increased by only three to eight points in those areas over the same time period. Because science and social studies are

Table 8
Nowlin Iowa Tests of Bsic Skills (ITBS) Scores Presented as Percentile Ranks
1989-91

Grade	1988-89			1989-90			1990-91			
Subject	Minority	Non-Minority	Total	Minority	Non-Minority	Total	Minority	Non-Minority	Total	District 1991
Six										
Reading	22	36	27	30	37	33	23	36	28	33
Math	17	27	21	32	39	35	25	36	29	34
Language	31	37	34	36	40	37	30	36	32	39
Science	30	45	36	44	53	47	55	71	60	51
Social Studies	33	51	39	48	55	50	51	71	57	46
Seven										
Reading	28	42	32	27	47	34	32	38	34	38
Math	26	38	31	24	43	31	33	43	36	34
Language	36	42	38	34	42	36	36	43	38	43
Science	30	46	35	47	63	52	62	67	63	52
Social Studies	31	42	35	43	58	48	39	50	42	39
Eight										
Reading	29	36	32	31	41	34	29	40	33	39
Math	24	34	29	28	42	32	22	39	28	34
Language	31	40	36	34	44	37	35	41	37	44
Science	27	40	33	35	53	41	32	54	40	47
Social Studies	28	35	31	39	53	43	32	45	37	39

Table 9

Comparison of Sixth and Eighth Grade 1989, 1990, and 1991 MMAT Scores for Nowlin, the Kansas City, Missouri School District (KCMSD) and the State of Missouri

Grade	Nowlin			KCMDS			State		
Subject	1989	1990	1991	1989	1990	1991	1989	1990	1991
Sixth									
Reading/Lang. Arts	240	249	208	255	244	225	321	310	296
Math	250	275	248	264	274	267	339	355	347
Science	246	295	280	260	284	268	344	375	352
Social Studies	235	271	254	254	267	257	322	335	330
Eight									
Reading/Lang. Arts	263	266	243	278	282	272	326	322	318
Math	252	254	241	269	280	270	335	346	331
Science	264	287	258	277	295	271	345	357	339
Social Studies	253	261	236	273	275	259	325	327	315

both environmental science theme-related subjects, this score patter suggests that theme implementation is having an impact on the scores at that grade level.

DRP. The Degrees of Reading Power Test (DRP) was developed to measure reading comprehension and was designed to be used primarily as a diagnostic test to match appropriate instructional materials with the student's reading level. The test results are reported at three levels: independent, instructional, and frustration. Table 10 presents a breakdown of instructional DRP score means by grade level for Nowlin and the district and the national percentiles for those means. Scores were obtained from the district Testing Office. Nowlin sixth grade scores were very close to the district average, converting to the 24th and 26th percentile ranks

Table 10

Comparison of Nowlin Middle School and Kansas City, Missouri School District Degrees of Reading Power (DRP) Scores for 1991

Grade	Mean DRP Score		Percentile Rank	
	Nowlin	District	Nowlin	District
Six	50	51	24	26
Seven	60	57	44	35
Eight	56	60	25	33

Note: Mean scores reported are at the instructional level

respectively. Seventh grade scores at Nowlin were at the 44th percentile, nine percentile points higher than the district's 35th percentile. However, Nowlin's eighth grade scores were eight percentile points lower than the district's being at the 25th and 33rd percentile ranks respectively.

Perceptions

Teachers. Responses of teachers to perception items on a questionnaire administered in the spring are summarized in Table 11. Results from common questions asked in spring 1990 appear in the table also. An examination of the results reveals that on all questions asked in both spring 1990 and spring 1991 the percent of positive responses rose, sometimes dramatically, with the percentage on 6 of the 12 items increasing in a positive direction by over 20%. Items with the greatest number of positive responses included the following: item 1) 100% of teachers believed they had enough team planning meetings this year--up 28% from last year; item 18) 98% said that they were committed to the theme to a good or great degree--up 19% from last spring; item 4) 93% said they engaged in more environmentally sound activities in their personal life as a result of knowledge gained through their experience in an environmental science magnet--up 21% from spring 1990; item 10) 93% said they were familiar with the goals and objectives in the school's planning outline--up 23% from last year; item 2) 88% believe their students participated in enough theme-related field experiences--up 7% from last spring; item 11) 87% agree or strongly agree that the school is implementing the theme according to the goals and objectives in the school's plan--up 22% from spring 1990; item 6) 86% stated that the principal has provided the support they need to successfully

Table 11
Nowlin Teacher Responses to Perception Items
1989-1991

Item		Response Alternatives	1989-1990 (N = 49)	1990-1991 (N = 59)
1.	Do you believe you have had enough team planning meetings?	Yes	72%	100%
		No	28%	0%
2.	In general, have your students participated in enough field experiences (field trips, outdoor activities, etc.) related to the environmental theme?	Yes	81%	88%
		No	19%	12%
3.	How satisfied have you been with the quality of your students' field trips?	Very Satisfied	34%	42%
		Satisfied	45%	42%
		Dissatisfied	15%	13%
		Very Dissatisfied	6%	4%
4.	Do you engage in more environmentally sound activities in your own personal life as a result of increased knowledge about environmental issues gained through your experience at an environmental science magnet?	Yes	72%	93%
		No	28%	7%
5.	During the past quarter was your team able to utilize a plant and an animal activity related to a current environmental issue?	Yes	67%	84%
		No	33%	16%
6.	The principal has provided the support I need to successfully implement the magnet theme.	Strongly Agree	13%	32%
		Agree	46%	54%
		Disagree	27%	11%
		Strongly Disagree	15%	4%
7.	The science resource teachers have provided the support I need to successfully implement the magnet theme.	Strongly Agree	16%	33%
		Agree	42%	38%
		Disagree	12%	18%
		Strongly Disagree	30%	11%
8.	The curriculum coordinator has provided the support I need to successfully implement the magnet theme.	Strongly Agree	17%	34%
		Agree	46%	46%
		Disagree	17%	11%
		Strongly Disagree	20%	9%
9.	The coordinator of instruction has provided the support I need to successfully implement the magnet theme.	Strongly Agree	---	34%
		Agree	---	50%
		Disagree	---	11%
		Strongly Disagree	---	5%
10.	I am familiar with the goals and objectives, in the Nowlin planning outline.	Strongly Agree	27%	34%
		Agree	43%	59%
		Disagree	27%	7%
		Strongly Disagree	4%	0%

Table 11 (cont.)

Nowlin Teacher Responses to Perception Items

1989-1991

Item		Response Alternatives	1989-1990 (N = 49)	1990-1991 (N = 59)
11.	I believe our school is implementing the magnet theme according to the identified goals and objectives.	Strongly Agree	7%	33%
		Agree	58%	54%
		Disagree	22%	11%
		Strongly Disagree	13%	2%
12.	Communication among faculty/staff is	Excellent	---	2%
		Good	---	12%
		Average	---	42%
		Fair	---	30%
		Poor		14%
13.	Communication between faculty/staff and administration is	Excellent	---	4%
		Good	---	34%
		Average	---	30%
		Fair	---	21%
		Poor	---	11%
14.	Communication between faculty/staff and students is	Excellent	---	5%
		Good	---	32%
		Average	---	47%
		Fair		11%
		Poor		5%
15.	Communication between faculty/staff and parents is	Excellent	---	2%
		Good	---	28%
		Average	---	42%
		Fair	---	19%
		Poor		9%
16.	Discipline is	Excellent		4%
		Good		2%
		Average		27%
		Fair		48%
		Poor		20%
17.	Disciplinary support by the building administration is	Excellent	---	12%
		Good	---	32%
		Average	---	21%
		Fair	---	26%
		Poor		9%
18.	To what degree are you personally committed to the environmental science theme?	To a Great Degree	44%	56%
		To a Good Degree	35%	42%
		To Some Degree	13%	2%
		Not At All	8%	0%
19.	Overall, what rating would you give to Nowlin this year?	Excellent	2%	5%
		Good	33%	52%
		Average	26%	30%
		Fair	17%	11%
		Poor	21%	2%

implement the magnet theme--up 27% from last spring; item 3) 84% are satisfied with the quality of the students' field trips--up 5% from spring 1990; item 5) 84% said that during the last quarter their team had utilized a plant and an animal activity related to a current environmental issue (as called for by the planning outline)--up 17% from last year; item 9) 84% stated that the coordinator of instruction provided the support they needed to successfully implement the theme; item 14) 84% believe communications between faculty/staff and students is average to excellent; and item 8) 80% stated that the curriculum coordinator provided the support necessary to successfully implement the theme--up 17% from last spring. Five items drew positive responses from 50% to 75% of the teachers. Seventy-two percent of the teachers said the communication between faculty/staff and parents was average to excellent (item 15). Seventy-one percent of responding teachers stated that the science resource teachers provided the support they needed to successfully implement the magnet theme (item 7). Sixty-eight percent of teachers said that communication between faculty/staff and administration is average to excellent (item 13), while 65% said that administration's support of discipline is average to excellent (item 17). Fifty-six percent of teachers believe that communication among faculty/staff is average to excellent (item 12). Item 16, rating discipline at Nowlin, elicited the most negative response on the part of the teachers with 33% rating it average to excellent, 48% rating it fair, and 20% rating it as poor.

Teachers were also asked to list the strengths and weaknesses of the program and to make suggestions to improve the program in 1991-92. Strengths listed by at least ten percent of 47 responding teachers included the following: 1) field trips (30%); 2) some resource teachers (26%); 3) faculty/staff (26%); 4) good facilities (21%); 5) principal (15%); and 6) materials/financial resources (13%). Weaknesses mentioned by at least ten percent of the 44 responding teachers included the following: 1) discipline problems (41%); 2) lack of good communication or commitment on part some faculty/staff (23%); and 3) not enough support or time in classroom by some resource teachers (11%). Of the 41 responding teachers at least ten percent gave the following suggestions for improvement: 1) plan and provide consistent discipline (22%) and 2) improve staff teaming and communication (20%). In addition, 41% of teachers responding suggested various ideas for inservice/staff development. A list has been provided to the building principal.

Administrative and support staff. The building administration and support staff were also asked to give their perceptions of the strengths and weaknesses of theme implementation at Nowlin during 1990-91 and to make suggestions for improvement.

Mentioned by at least 10% of the 16 respondents as strengths were the following: 1) teachers (31%); 2) commitment or acceptance of the theme (25%); 3) resource teachers (19%); 4) barn and greenhouse (19%), 5) principal (13%); and 6) additional administration in the building (13%). Hindrances to implementation mentioned by at least 10% of the 17 respondents included the following: 1)conflicts among staff, especially within teams (29%); 2) disruptive students (18%); 3) some teachers lack of commitment to the theme (18%); and some purchase orders slow to be filled (12%). Suggestions mentioned by more than 10% of the 17 respondents included the following: 1) have more theme-related inservice--particularly infusion in the classroom and outdoor education (35%); 2) increase number of teachers and students involved in field trips (25%); 3) increase the number of outdoor activities (25%); 4) have more cooperative teaming (12%); and 6) develop plans for and inservice about disruptive students (12%).

Parents. In the spring of 1991, 224 Nowlin parents were randomly selected to be interviewed by phone. Responses are summarized in Table 12. The actual number of respondents for each item varies between 182 and 224 because some parents did not respond or had no opinion on some items. Questionnaire results from spring 1990 also appear in the table. An examination of the table reveals that on questions common to both spring 1990 and spring 1991, the percent of positive responses rose, sometimes dramatically, with the positive percentage on 10 of the 14 items increasing by over 30%. The first ten items are associated with the environmental science program implementation or aspects of education at the building level. All items in that groups elicited 98% to 100% positive (yes) responses. Parents said they believed the principal had been responsive to their concerns (item 7) and that their child was safe at Nowlin (item 6). They also said they were satisfied with the progress their child had made in both the theme and basic courses, with the teachers, and overall, with the school itself (items 3, 4, 8, and 9 respectively). One-hundred percent of the parents responding said they would recommend Nowlin to other parents (item 10). Ninety-eight percent of parents said they believed their child was acting in a more environmentally responsible way since attending an environmental science magnet (item 1) and that their child had made their family more aware and encouraged them to act more environmentally responsible (item 2).

Table 12

Nowlin Parent Survey Responses to Program Perception Items

1989-91

Item		Response Alternatives	1989-90 N= 176	1990-91 (N = 224)
1.	Do you believe your child is acting in a more environmentally responsible way since attending Nowlin?	Yes No	61% 39%	98% 2%
2.	Has your child made your family more environmentally aware, encouraging you to act more environmentally responsible through recycling, etc.	Yes No	52% 48%	98% 2%
3.	Are you satisfied with the progress your child has made in the environmental science theme?	Yes No	63% 38%	99% 1%
4.	Are you satisfied with the progress your child has made in basic courses(i.e.English and math?	Yes No	61% 39%	100% 0%
5.	Have communications from school like newsletters, notes, or phone calls been understandable and helpful?	Yes No	80% 21%	100% 1%
6.	Do you believe your child is safe at Nowlin?	Yes No	--- ---	100% 1%
7.	Overall, do you believe that the principal of Nowlin has been responsive to your concerns?	Yes No	57% 44%	99% 1%
8.	Overall, are you satisfied with your child's teachers?	Yes No	65% 35%	100% 1%
9.	Overall, are you satisfied with Nowlin Middle School?	Yes No	45% 55%	99% 2%
10.	Would you recommend Nowlin to other parents?	Yes No	55% 45%	100% 1%
11.	Have you met your child's teachers for this year?	Yes No	--- ---	99% 1%
12.	Do you believe your participation as a parent is welcome at Nowlin (e.g. at SAC, as a volunteer, etc.)	Yes No	82% 18%	99% 1%
13.	Did you attend the last parent/teacher conference?	Yes No	--- ---	100% 0%
14.	Do you attend SAC meetings?	Often Occasionally Never	--- --- ---	13% 87% 0%
15.	How often have you worked on homework assignments with your child this school year?	everyday 2-3 days/week occasionally never	--- --- --- ---	51% 41% 8% 1%

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Table 12 (continued)

Nowlin Parent Survey Responses to Program Perception Items

1989-91

Item		Response Alternatives	1989-90 N= 176	1990-91 N= 224
16.	Do you live in the Kansas City, Missouri School District?	Yes No	--- ---	100% 0%
17.	When your child applied to Nowlin was the application handled in a reasonable amount of time?	Yes No	65% 35%	100% 1%
18.	When you applied for a magnet school were you treated in a courteous and helpful manner?	Yes No	--- ---	100% 1%
19.	Do you think the way students were chosen for magnet schools was fair?	Yes No	52% 48%	100% 1%
20.	Does your child use district provided bus or taxi transportation?	Yes No	96% 4%	100% 0%
21.	Do you believe the school bus or taxi takes your child to school and back in a reasonable amount of time?	Yes No	76% 24%	100% 1%
22.	Do you believe the school bus or taxi provides safe transportation for your child?	Yes No	77% 23%	100% 1%

Note: Data are from phone surveys of Nowlin parents in Spring of 1991. Actual number of respondents varied between 182 and224 as some parents did not choose to answer all questions. Percents are rounded to the nearest whole number and so may not sum to exactly 100%.

These responses are indicative of the implementation of the theme, and are most encouraging as outcomes because they suggest students are taking what they learn at school out into their personal lives in changed behaviors and attitudes. Items 11 through 15 are related to parent involvement with the school and their child's education. Ninety-nine percent of parents said they had met their child's teachers and that they believed their participation as parents was welcome at Nowlin (items 11 and 12 respectively). One-hundred percent said they attended the last parent/teacher conference (item 13), while 87% said they attended School Advisory Council (SAC) meetings occasionally and another 13% said they attended often (item 14). Ninety-two percent of the parents said they worked on homework with their child at least two to three days a week. The final seven items refer to whole district issues related to magnet implementation. One-hundred percent of parents responding said they live in the Kansas City, Missouri School District (item 16). Asked about the magnet school application process, 100% of parents said their application was handled within a reasonable amount of time and that they

were treated in a courteous and helpful manner (items 17 and 18 respectively). One hundred percent said they believe the way students were chosen for magnet schools was fair (item 19). All of the surveyed parents said that their child used district provided transportation. One-hundred percent of those parents responding said they believed that the district provided transportation took their child to and from school in a reasonable amount of time and that the transportation was safe (items 21 and 22 respectively).

Students. Two-hundred and twenty-one students from randomly selected classrooms across all grade levels were surveyed in spring 1991. Results of the survey, shown in Table 13, are broken down by grade level because on a large number of items responses differed to a large degree across grades. Twenty-two items actually had two or more grade levels differ by 10% or more. Of those, nine items differed between grade levels by 20% or more and three items differed between grade levels by 30% or more. Across all grade levels, two-thirds or more students answered that they liked the field trips they went on this year (item 2), learned a lot about taking care of nature and the world around us (item 5), tried to litter less because of what they learned (item 6), learned problem solving skills and decision making skills that they have been able to apply in their lives outside school (item 18), and that they believe there is good communication between students and counselors (item 19E). Those items which, across grade levels elicited, less than 35% positive (yes) responses included the following: item 16) believe students behave well in classes; item 17) believe students behave well in hallways; and item 21) believe they might want a career in the field of environmental science. One of the points of greatest difference between grade levels, with differences of 30% or more, was between sixth and eighth graders on item one when asked if they had learned a lot about science this year (93% and 61% said yes respectively). Item 12, asking students if they liked their science labs, showed large differences between sixth and eighth graders and between seventh and eighth graders, with sixth and seventh graders saying yes 69% and 71% of the time respectively and eighth graders saying yes only 43% of the time. Asked whether they believed there was good communication between students and teachers, sixth graders responded yes 70% of the time compared to only 38% of the time for seventh graders (item 19a).

To get a broader picture of the pattern of student perceptions over time, Appendix A contains a table with student questionnaire results from both 1990 and 1991. Responses at the three grade levels were mixed, however, the percent of positive answers in spring 1991 remained the same or increased over positive responses in spring 1990 on 61% of the questions.

Table 13
Nowlin Student Perception Questionnaire
Spring 1991
(N = 221)

Items		Percent Responding Yes		
	Grade	6th	7th	8th
1.	Did you learn a lot about science at school this year?	93%	77%	61%
2.	Did you like the field trips you went on this year?	86%	81%	66%
3.	Did you learn a lot on the field trips this year?	70%	59%	51%
4.	Did you learn a lot of new things about nature?	67%	75%	65%
5.	Did you learn a lot about taking care of nature and the world around us?	86%	92%	74%
6.	Do you try to litter less because of what you learned?	68%	72%	73%
7.	Do you try to save energy more because of what you learned in school?	43%	40%	41%
8.	Do you try to save water more because of what you learned in school?	57%	43%	46%
9.	Do you save things to recycle--like cans or papers?	59%	58%	70%
10.	Have you taught your family things you learned at school about taking care of the environment?	46%	38%	29%
11.	Do you learn about taking care of our environment in all your classes--like in reading, math, and art?	30%	32%	37%
12.	Do you like your science labs?	69%	71%	43%
13.	Do you like your science classes outdoors?	82%	80%	50%
14.	Do you like going to your school?	70%	56%	53%
15.	Do you feel safe at Nowlin?	53%	59%	48%
16.	Do you believe students are well behaved in classes?	17%	26%	25%
17.	Do you believe students are well behaved in the halls?	10%	13%	35%
18.	Are you learning problem solving skills and decision making skills that you have been able to apply in your life outside school?	82%	66%	75%
19.	Do you believe there is good communication between students and			
	A. Teachers	70%	38%	42%
	B. Principal	59%	38%	42%
	C. Assistant Principals	70%	70%	57%
	D. Secretaries	48%	46%	49%
	E. Counselors	88%	78%	82%
	F. Resource Teachers	46%	42%	25%
20.	Have you learned about career opportunities in the field of environmental science?	38%	43%	53%
21.	Do you believe you might want to have a career in the field of environmental science?	30%	30%	23%
22.	Do you participate in recycling projects, clubs, science fairs, or other activities available?	61%	42%	36%
23.	Do you think your friends in other schools would like to go to your school?	57%	43%	44%

Student responses were less positive across all grade levels when asked if they try to litter less because of what they have learned, if they like their science labs, and if they believe communication between students and vice-principals is good (items 6, 12, and 19c respectively). Student responses were more positive across all three grade levels when asked if they believe students are well-behaved in classes and in the halls (items 16 and 17 respectively), are learning problem solving skills and decision making skills that they have been able to apply in their lives outside school (item 18), believe their is good communication between the students and secretaries and the students and counselors (items 19d and 19e respectively), have learned about career opportunities in the field of environmental science (item 20), believe they might want a career in environmental science (item 21), participate in recycling projects, clubs, science fairs, or other activities available (item 22), and think their friends in other schools would like to go to Nowlin (item 23). The increase across grade levels in student reports of learning about career opportunities being concomitant with an increase in students expressing an interest in careers related to the field is particularly interesting to note.

Conclusions

In its second year of full operation, the Nowlin Middle School Environmental Science program made some important progress in implementing their theme but also experienced some significant difficulties. The infusion of the magnet theme was evidenced in a variety of ways, with theme-centered displays, speakers and activities, on-going recycling projects, and theme-related field trips. Classroom observations revealed that the theme is being infused across the curriculum, with the greatest amount of time spent on theme-related activities being in science and social studies classes, not surprising since both areas are closely tied to the environmental science theme. Critical thinking and problem solving skills were also observed across the curriculum with the greatest amount of time devoted to activities involving these skills spent in math and language arts classes. These data were consistent with the perception of over two-thirds of the students at all grade levels that they were learning problem solving skills and decision making skills that they have been able to apply in their life outside school. Teachers and students also reported that they were applying more sound environmental practices in their personal lives, with parent data consistent with the student perception that this was so. Parents also said that the students were making them more environmentally aware and encouraging them to act in more environmentally sound ways. This second year of program

implementation, the teacher and parent questionnaires revealed a dramatic jump in positive perceptions over responses given by the two groups in the spring of 1990. Student questionnaires also showed a trend toward more positive perceptions, with a greater proportion of positive answers on slightly over one-half of the responses at different grade levels. Overall, sixth grade students had more positive perceptions of the environmental science program and the school itself than either the seventh or eighth graders. Difficulties can be expected in any new program and Nowlin teachers expressed their perception of two of the problems on the teacher questionnaire. Sixty-eight percent of teachers rated discipline as fair or poor and 44% rated communication among the faculty/staff as fair or poor. Student perceptions were consistent with teachers when asked about the behaviors in the classrooms and halls. The large majority of students at all grade levels (over 65%) said students were not well behaved in those school settings.

ITBS test scores have gone up over the two years since magnet implementation began in the theme-related areas of science and social studies. However, no major progress has been made in raising ITBS test scores in the core subjects such as language and math. On the MMAT, Nowlin scores are comparable to those of the district across subjects at sixth grade and in science and social studies at eighth grade, but remain weak in comparison to the district in eighth grade reading/language arts and math areas and in all subject areas when compared to the state.

Acting in response to past recommendations (Seever, 1990), the principal reports that team meetings have been held to try to keep open lines of communication; resource teacher positions have all been filled; teacher transfers were facilitated by the building and district administration; the goals and objectives of the Nowlin Planning Outline were reviewed and clarified; and the discipline policy was reviewed and discussed. Efforts to clarify the goals and objectives were apparently successful as 93% of teachers reported that those objectives were clear. Communication problems among faculty/staff are still perceived by a majority of teachers. Discipline problems still plague teachers and administration and are recognized in questionnaire responses by both teachers and students. Students who are chronic discipline problems and/or need alternative types of education present a problem in a school of Nowlin's size. The district reportedly assured Nowlin, during their first year of theme implementation, that when other middle schools open Nowlin's enrollment will drop, but that they must

maintain current high enrollment figures until then. Based on information summarized in this report, the following recommendations can be made:

1. The building administration should continue to work closely with the staff to keep communication open and to work through issues of dissatisfaction when possible. Forty-four percent of teachers reported communication problems when citing weaknesses or hindrances to implementation.

2. The staff and administration should meet and develop a discipline code which is workable based on the two years of experience with problems and successes in that area. The district should offer support in this area through provision of inservice, support, and help in dealing with or placing chronic or serious offenders if necessary. Over 65% of both teachers and students reported behavior problems.

3. The building administration should continue to provide quality inservice opportunities making every effort to utilize teacher input, such as the inservice needs expressed on the teacher questionnaire responses in this report and through on-going interaction and discussion with the faculty and staff.

4. The district administration should ensure that expert help is available to do item analyses of ITBS and MMAT scores and to provide appropriate recommendations for curriculum and instruction revisions based on those analyses and the input of building administration, instructional personnel, and teachers.

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Appendix A
Nowlin Student Perception Questionnaire

Table A
Nowlin Student Perception Questionnaire
1989-91

Items	Percent Responding Yes Grade 6th 1989-1990		Grade 7th 1989-1990		Grade 8th 1989-1990	
1. Did you learn a lot about science at school this year?	84%	93%	80%	77%	84%	61%
2. Did you like the field trips you went on this year?	77%	86%	82%	81%	67%	66%
3. Did you learn a lot on the field trips this year?	52%	70%	59%	59%	56%	51%
4. Did you learn a lot of new things about nature?	68%	67%	59%	75%	65%	65%
5. Did you learn a lot about taking care of nature and the world around us?	74%	86%	71%	92%	79%	74%
6. Do you try to litter less because of what you learned?	68%	68%	78%	72%	75%	73%
7. Do you try to save energy more because of what you learned in school?	62%	43%	37%	40%	49%	41%
8. Do you try to save water more because of what you learned in school?	48%	57%	29%	43%	51%	46%
9. Do you save things to recycle--like cans or papers?	74%	59%	65%	58%	51%	70%
10. Have you taught your family things you learned at school about taking care of the environment?	42%	46%	49%	38%	39%	29%
11. Do you learn about taking care of our environment in all your classes--like in reading, math, and art?	36%	30%	33%	32%	32%	37%
12. Do you like your science labs?	90%	69%	76%	71%	70%	43%
13. Do you like your science classes outdoors?	84%	82%	63%	80%	61%	50%
14. Do you like going to your school?	48%	70%	49%	56%	53%	53%
15. Do you feel safe at Nowlin?	29%	53%	41%	59%	54%	48%
16. Do you believe students are well behaved in classes?	7%	17%	14%	26%	14%	25%
17. Do you believe students are well behaved in the halls?	4%	10%	8%	13%	14%	35%
18. Are you learning problem solving skills and decision making skills that you have been able to apply in your life outside school?	52%	82%	47%	66%	32%	75%
19. Do you believe there is good communication between students and						
A. Teachers	49%	70%	43%	38%	49%	42%
B. Principal	44%	59%	61%	38%	44%	42%
C. Assistant Principals	75%	70%	71%	70%	58%	57%
D. Secretaries	35%	48%	45%	46%	44%	49%
E. Counselors	84%	88%	76%	78%	77%	82%
F. Resource Teachers	45%	46%	57%	42%	42%	25%
20. Have you learned about career opportunities in the field of environmental science?	36%	38%	33%	43%	30%	53%
21. Do you believe you might want to have a career in the field of environmental science?	28%	30%	20%	30%	16%	23%
22. Do you participate in recycling projects, clubs, science fairs, or other activities available?	29%	61%	35%	42%	23%	36%
23. Do you think your friends in other schools would like to go to your school?	18%	57%	27%	43%	24%	44%

The School District of Kansas City, Missouri